REMARKS

The present amendments and remarks are in response to the Final Office Action of January 30, 2006. Claims 36-39, 41, 43, and 45-47 are pending in the present application. Claims 1-35, 40, 42, 44, and 48-65 were with withdrawn subject to restriction/election requirements. Reconsideration of the application is respectfully requested in view of the following responsive remarks.

In the Final Office Action of January 30, 2006, the following actions were taken:

(1) Claims 36-39, 41, 43, 45 and 46 were rejected under 35 U.S.C. 102(a) as being anticipated by U.S. Patent Application No. 2002/0198287 to Ohta et al. (hereinafter "Ohta");

(2) Claims 36-39, 41, 43, 45 and 4 were rejected under 35 U.S.C. 103(a) as being unpatentable over Ohta;

(3) Claims 36-39 and 43 were rejected under 35 U.S.C 102(b) as being anticipated by JP 62283174 to Handa et al (hereinafter "Handa");

(4) Claims 36-39 and 43 were rejected under 35 U.S.C. 103(a) as being unpatentable over Handa;

(5) Claims 36-39 and 43 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 5,981,651 to Patel et al. (hereinafter "Patel");

(6) Claims 36-39 and 43 were rejected under 35 U.S.C. 103(a) as being unpatentable over Patel;

(7) Claims 36-39, 43, and 47 were rejected under 35 U.S.C 102(b) as being anticipated by EP 1108758 to Johnson et al (hereinafter "Johnson");

(8) Claims 36-39, 43, and 47 were rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson;

(9) Claims 36-39, 41, 43, and 45-47 were rejected under 35 U.S.C 102(b) as being anticipated by EP 869 160 to Nichols et al. (hereinafter "Nichols"); and

(10) Claims 36-39, 41, 43, and 45-47 were rejected under 35 U.S.C 103(a) as being unpatentable in view of Nichols.

It is respectfully requested that the presently pending claims be examined and allowed. Applicant submits that each and every amendment herein, and throughout the prosecution of the present application, is fully supported by the specification as originally filed, and that no new matter has been added.

The Examiner upheld rejections of claims 36-39, 41, 43, and 45-47 under 35 U.S.C. 102 and 35 U.S.C. 103 over five individual references. The Examiner has asserted that each of the references teaches the same product taught in the product-by-process claim of claim 36. The Applicant respectfully reiterates that Applicant acknowledges that patentability in product by process claims is based on the end product itself. The Applicant recognizes that patentability of claims in such cases is not based not the method of production.

However, the Applicant asserts that the products taught in each of the cited references cannot be the same as the claimed product by virtue of the fact that a different process in fact made the products, and that this process recited in the claims and used by the Applicant will not yield the same product as those in the cited prior art. Therefore, products created as claimed must be different than those products of the cited references. Because the recited process inherently yields a unique product, discussion of the process for reaching the desired product is useful and even essential in comparing the Applicant's invention to the references cited by the Examiner. As the Examiner has cited five references under both 35 U.S.C. §§ 102 and/or 103, the rejections will be discussed based on each individual reference rather than by the nature of the rejection.

Present Invention

Claim 36 of the present invention teaches a latex-containing ink-jet ink, which includes a liquid vehicle, a colorant that is dissolved or dispersed in the vehicle, and latex particulates that are dispersed in the liquid vehicle. Once again, the Applicant recognizes that, in the case of product by process claims, the product is being claimed, not the process. That being said, the process

recited in claim 36 creates inherently distinctive latex particulates. The latex particulates are formed by a specific process, which requires the preparation of a monomer emulsion that includes an aqueous phase and an organic monomer (dispersed or co-dispersed in the aqueous phase) including at least one blocked acid monomer. In other words, the polymerization (or copolymerization) of the blocked acid monomer occurs within the discontinuous phase of the aqueous emulsion. After polymerization of the organic monomer(s), which includes at least one blocked acid monomer, blocked acid latex particulates dispersed within the aqueous phase are formed. The blocked acid latex particulates are then unblocked to form acidified latex particulates that are suspended in the aqueous phase, and the aqueous phase forms at least part of the liquid vehicle of the ink-jet ink. Additionally, the process of unblocking the blocked acid latex particulates necessarily releases blocking groups.

Rejections based on Ohta

The Examiner upheld rejections on claims 36-39, 41, 43, 45, and 46 under 35 U.S.C. 102 and 103 as being either anticipated by or unpatentable over Ohta. The Examiner has asserted that Ohta teaches a latex containing ink-jet ink comprising an aqueous liquid vehicle, a pigment colorant dissolved or dispersed in the liquid vehicle, and a dispersed surface sulfonated acidic emulsion latex. At first glance, Ohta appears to teach a similar ink to the ink claimed in claim 36, however, the ink composition is different from that of the proposed claims because of the process or method of manufacture of the latex particles.

Ohta teaches two ways to manufacture the sulfonated latex particles used in its ink. First, the sulfonated dispersibility-imparting group can be part of the monomer structure of the constituent resin and then polymerized. Second, the a base polymer or skeletal backbone of styrene-(meth)acrylic acid is made without the sulfur containing dispersibility-group. Then, the already polymerized styrene copolymer can be altered so that and the dispersibility–imparting group is grafted to the skeletal backbone of the styrene copolymer. In other words, the monomers are polymerized together

first and then a sulfur containing group is grafted added. See Paragraph 59 of the Ohta specification.

As is generally known in the art, latex particulates are often formed through emulsion polymerization of an acid monomer, with or without other monomers, thus creating particulate surface charge. The acid monomers should be sufficiently hydrophobic so as to substantially remain in the organic phase of the emulsion that forms the particles. The need for hydrophobicity has limited effective polymer design to the use of relatively weak organic acids. Thus, monomers including strong acids (such as sulfonates, phosphonates, etc.), or monomers including multiple acids (such as di-acids), are excessively water soluble for use in typical emulsion polymerization processes. Strong acid monomers and multiple acid monomers tend to migrate out of the organic phase and into the water phase where they form water-soluble and ion-bearing polymers that are detrimental to the ink. The resultant increase in the ionic strength of the aqueous phase of the latex dispersion reduces the effect of the charge surrounding each particle, thus weakening particle dispersion stability (the original goal in incorporating surface charge). This is why the process of manufacturing the latex is so important, and why the process of manufacture affects the final compositional properties.

As described above, the sulfur containing polymer latex used in Ohta can be manufactured in two ways. The first method of incorporating sulfur containing dispersibility-groups involves polymerizing monomers that already have sulfur-containing groups attached thereto. The monomers are polymerized together using emulsion polymerization to yield a copolymer having sulfur-containing groups, at least on the surface. As mentioned previously, this type of polymerization is problematic in that the strong acids or sulfur containing monomers have the tendency to migrate out of the organic phase and into the water phase prior to polymerization because of their high solubility. This results in a latex solution that has high concentrations of sulfur containing monomers in the aqueous phase thereby weakening the desired effect of stable particle dispersion. Conversely, the Applicant's method would prevent such migration by using blocking. It is worth noting that it is this exact

type of migration problem that the claimed composition (defined by the method of making) was intended to overcome.

Similarly, the second method of incorporating the sulfur containing dispersibility group also yields a distinct latex composition when compared to that made by the currently claimed. Polymerizing the monomers and then grafting on the dispersibility-imparting group inherently yields a latex polymer emulsion with residual dispersibility-imparting groups in the aqueous phase (see paragraph 70 of Ohta), and substantially different from that of the Applicant's. Further, by grafting these groups to the surface at the end, the presence of these groups will be more concentrated at the surface, whereas the presently claimed latexes will have a more uniform distribution of blocked acid groups throughout the latex particle because of the process used to form the particles. Thus, this is another example where the process must necessarily generate a different composition than the prior art.

The process of manufacturing the latex particles used in the ink of claim 36 is distinct from both of the processes taught in Ohta and, as discussed, it yields a unique latex ink composition. As a desired effect of the present application is better dispersibility, any element of the ink composition that affects the particle dispersion of the latex ink should be noted. In the case of Ohta's first presented process, there are strong acids and/or sulfur-containing monomers that have a tendency to migrate out into the aqueous phase, thus adversely affecting the dispersibility. For Ohta's second method, residual dispersibility-imparting groups remain in the solution. Not only does the ink composition of claim 36 not have large amounts of unpolymerized sulfur monomers or unattached sulfur containing dispersibility groups present during formation (which preserves the greater ionic difference between the latex particles and the aqueous phase), but the ink composition has amounts of the blocking member which is released into the aqueous phase, which are freed after the blocked acid groups are unblocked and become released into the aqueous phase. Neither of these compositional properties is present in Ohta. Therefore, as the ink composition of claim 36 is distinct over those taught in Ohta, it is respectfully requested that all rejections with respect to this reference be withdrawn.

Rejections based on Handa and Patel

The Examiner upheld rejections of claims 36-39 and 43 under 35 U.S.C. 102 and 103 as being either anticipated by or unpatentable over Handa or Patel. As discussed above, although the process is not the claimed subject matter in product-by-process claims, the process for manufacturing the latex component of the claimed ink composition inherently affects the nature of the composition. The claimed process, therefore, inherently creates a product that is different from both Handa and Patel. Handa teaches an ink composition with a carboxylic acid-containing polymer. Patel teaches a similar ink composition including water, a colorant, and polymer particles of styrene butylacrylate acrylic acid. Neither Handa nor Patel teach or discuss the use of blocked acid monomers to make the latex, and then unblocking the acid groups after polymerization. As discussed above, because there is no blocking or unblocking taking place in the manufacture of the polymers in the cited reference, the resulting latex containing ink compositions are distinct as compared to the ink composition of claim 36. Specifically, the compositions of Handa and Patel do not generate released blocking groups, and are thus missing an element of the claimed composition. Secondly, the use of acids (even weak acids) on monomers that are not blocked will result in much more migration of acidic monomers into the aqueous phase than that of the present claims. As noted earlier, the migration of acidic monomers affects the dispersibility of the latex particulates in the composition and can have detrimental affects on the dispersion stability. With the blocked acid monomers of the present invention, this migration is significantly reduced or avoided, resulting in a distinguishable composition. Therefore, it is respectfully requested that all rejections with respect to these references be withdrawn.

Rejections based on Johnson

The Examiner upheld rejections to claims 36-39, 43 and 47 under 35 U.S.C. 102 and 103 as being either anticipated by or unpatentable over Johnson. Johnson teaches an ink-jet composition including a colorant and a

polymeric binder. The polymeric binder is an emulsion-polymerized addition copolymer formed from a monomer mixture of ethylenically unsaturated monomers including 4-15% of at least one ethylenically unsaturated carboxylic acid functional monomer. However, Johnson is similar to Handa and Patel in that the acid groups of the monomers are not blocked prior to and then unblocked after the emulsion polymerization process. As discussed above, this difference in process results in a different compositional make-up of the ink, i.e. acid monomers migrating to the aqueous phase causing less differential of ionic character between the aqueous phase and the latex particles, and adversely affecting the dispersion stability, etc. Therefore, Johnson does not teach a product that is equivalent to the product of claim 36. This being the case, the Applicant respectfully requests that all rejections based on this reference be withdrawn and the claims be allowed.

Rejections based on Nichols

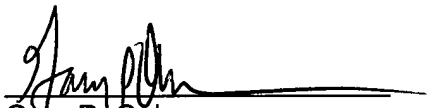
The Examiner upheld rejections to claims 36-39 41, 43, and 45-47 under 35 U.S.C. 102 and 103 as being either anticipated by or unpatentable over Nichols. Nichols teaches an ink composition including an ink vehicle and a resin emulsion of resin particles and a pigment colorant. The resin emulsion is an emulsion polymerized resin of monomers having carboxylic acid groups. Once again, there is no teaching of blocking the acid group prior to polymerization and unblocking the acid group after polymerization. Therefore, the ink composition does not contain released blocking groups. As the product of the current invention is made in this manner, it yields an effectively distinct and unique ink composition for the reasons laid out above. As such, it is respectfully requested that all rejections based on this reference be withdrawn and all the claims be allowed.

In view of the foregoing, Applicant believes that claims 36-39, 41, 43, and 45-47 present allowable subject matter and allowance is respectfully requested. If any impediment to the allowance of these claims remains after consideration of the above remarks, and such impediment could be removed during a telephone interview, the Examiner is invited to telephone W. Bradley Haymond (Registration No. 35,186) at (541) 715-0159 so that such issues may be resolved as expeditiously as possible.

Please charge any additional fees except for Issue Fee or credit any overpayment to Deposit Account No. 08-2025

Dated this the 28th day of March, 2006.

Respectfully submitted,



Gary P. Oakeson
Attorney for Applicant
Registration No. 44,266

Of:

THORPE NORTH & WESTERN, LLP
8180 South 700 East, Suite 200
Sandy, Utah 84070
(801) 566-6633

On Behalf Of:

HEWLETT-PACKARD COMPANY
1000 NE Circle Blvd., m/s 422B
Corvallis, OR 97330-4239
(541) 715-0159